

	1 of 8	Die Collar / Box Tap – Standard Operating Procedure (SOP)				OEPS
DOCUMENT NUMBER	CLASSIFICATION	DOCUMENT LEVEL	REVISION NUMBER	ISSUE DATE	PREPARED BY	APPROVAL
GL-INTS-OEPS-L4-222	CONTROLLED	L4	000	21 MAR 2016	E.P. Friedrich	TWI COMMITTEE

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1.0 Purpose

This document discusses standard procedures to be used while utilizing a Die Collar / Box Tap in Fishing Operations to externally engage a Fish.

2.0 Scope

This procedure applies to either the Weatherford Supervisor or the Customer on location, to select the proper Die Collar / Box Tap help provide proper operation of the tool in the field, including make-up, trip in the hole, latch onto a Fish, retrieval to surface and if necessary to release from Fish downhole.

3.0 Abbreviations

- **DC/BT** Die Collar / Box Tap
- **TU** Tech Unit
- **SOP** Standard Operating Procedure
- **TOF** Top Of Fish
- **BHA** Bottom Hole Assembly
- **ID** Inside Diameter
- **OD** Outside Diameter
- **OH** Open Hole
- **SPP** Stand Pipe Pressure
- **SJ** Safety Joint (usually with same connection as the DC/BT)
- **DC** Drill Collar
- **SPP** Stand Pipe Pressure
- **MM** Mud Motor

NOTE: it is always recommended to run a Safety Joint directly above a Die Collar / Box Tap, to be able to provide a more reliable release mechanism if required.

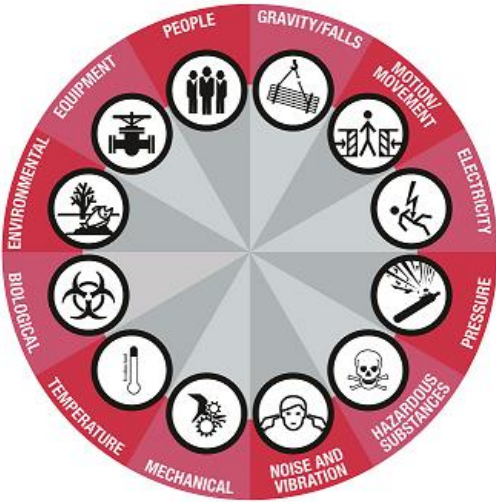
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4.0 Safety

4.1 Statement of Compliance

- 4.1.1 Locations shall conduct a site specific workplace risk assessment to determine potential hazards which necessitate the implementation of controls including personal protective equipment (PPE). Attend all appropriate safety briefings / meetings.
- 4.1.2 Employees and sub-contractors regardless of position or qualification not only have the right but the obligation to stop any work if conditions are deemed to be unsafe or a hazardous situation arises
- 4.1.3 In the event of any conflict with this technical unit the OEM documentation takes precedence and its requirements are, inclusive of specified OEM spare parts
- 4.1.4 The Management of Change GL-WFT-OEPS-L2-15 Management of Change applies to this work instruction, modification is prohibited without authorization from the GPLM

4.2 Hazard Identification

Symbols & Symbol Guidance		
	Gravity / Falls	The force caused by attraction of all other masses to the mass of the earth. Examples; falling object, collapsing roof, and a body tripping or falling
	Motion / Movement	The change in position of objects or substances. Examples: vehicle, vessel, or equipment movement; flowing water; wind; and body positioning when lifting, straining or bending
	Electricity	The presence and flow of an electric charge. Examples: Power lines, transformers, static charges, lightning, energized equipment, wiring, batteries
	Pressure	Energy applied by a liquid or gas that has been compressed or is under a vacuum. Examples: pressure piping, compressed cylinders, control lines, vessels, tanks, hoses, and pneumatic and hydraulic equipment
	Hazardous Substances	Including chemicals, radioactives, lithium batteries, explosives – The energy present in chemicals that inherently, or through reaction, has the potential to create a physical or health hazard to people, equipment or the environment. Examples: flammable vapors, reactive hazards, carcinogens or other toxic compounds, corrosives, pyrophorics, combustibles, oxygen-deficient atmospheres, welding fumes and dusts
	Noise & Vibration	Sound is produced when a force causes an object or substance to vibrate and the energy is transferred through the substance in waves. Examples: equipment noise, impact noise, vibration, high-pressure release, and the impact of noise to communication
	Mechanical	The energy of the components of a mechanical system, i.e., rotation, vibration, or motion within an otherwise stationary piece of equipment or machinery. Examples: rotating equipment, compressed springs, drive belts, conveyors, and motors.
	Temperature	The measurement of differences in thermal energy of objects or the environment, which the human body senses as either heat or cold. Examples: open flame, ignition sources, hot or cold surfaces, liquids or gases; steam; friction
	Biological	Living organisms that can present a hazard. Examples: animals, bacteria, viruses, insects, blood-borne pathogens, improperly handled food, and contaminated water
	Environmental	The impact of our surroundings. Examples: weather conditions, simultaneous operations, confined spaces
Hazard identification should be a systematic process and the wheel is used to ensure that the person(s) conducting the exercise have considered all categories and thus ensuring that the assessment is comprehensive. Each of the categories is considered in turn and hazards related the task/activity can be identified		
	Equipment	Critical to Service Quality. Examples: critical installation, hold / witness point, special equipment, parameters, specifications
	People	Specialized or additional training requirements over and above normal role based requirements.

4.3 Personal Protection Requirements

Unless a risk assessment determines the need for additional specialized PPE the following approved equipment is required; steel toed footwear, safety glasses / eye wear, hard hat / helmet, gloves suitable for the task, coveralls and hearing protection.

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5.0

5.1

Procedure

Pre-Running Checks

- Determine the OD of the Fish and the Hole Size to be fishing in. This will determine what DC/BT and accessories to run. NOTE: It is ALWAYS recommended to run a Safety Joint above a DC/BT, as the basic design of these are releasable.
EXAMPLE: 8 ½" OD OH, thru 9 5/8" OD 53.5# ppf casing, with broken body of a MWD tool, 7 ¼" OD.
- What were the actions leading up to the Fish to be left in hole?
EXAMPLE: Drill String was rotating and drilling when a loss in torque, SPP and weight indicated that something had parted down hole. The loss of weight was minimal, but the the loss of torque and SPP was stuck substantial.
- Was the rig tripping in/out of the hole?
EXAMPLE: No Drilling on Bottom.
- Was it on Bottom Drilling/off bottom making a connection/producing, etc.?
EXAMPLE: Drilling on Bottom.
- Was the Fish dropped from surface?
NOTE: This information will help determine where the TOF is. This is extremely important, as It is imperative NOT to tag the Fish unexpectedly, causing possible damage to the Fish, the WP or an unsafe condition at surface.
EXAMPLE: Drilling on Bottom
- What does the Fish consist of?
EXAMPLE: 8 ½" OD Bit, 7" OD Mud Motor, partial body of a MWD Tool (6.5' long, (7 ¼" OD at parted point), 7" OD at connection. Total length of Fish is 38' or 11.6 m
- What is BHA, or String left in well? 8 ½" OD Bit, 7" OD Mud Motor, partial body of a MWD Tool (6.5' long, (7 ¼" OD at parted point), 7" OD at connection. Total length of Fish is 38' or 11.6 m).
- What will be the Fishing String? Connection, Grade, Size OD and Condition, if different from String left in hole? (New, Used, Last Inspection, etc.)
EXAMPLE: Fishing string has NC50 connection of the MWD Tool and the top connection of the MM and 4 ½" Reg connection on the bottom of the MM and the top of the Bit.
- If the Fish is in OH, has the hole been open for a while, or if the hole may need to be cleared of debris, it is be recommended to run a cleanout bit run prior to running a WP Washover Assembly.
NOTE: Be extremely careful at the TOF on clean out run, do not run bit extensively on TOF, as this may damage the Fish Top.
- What are the current Mud Fluid characteristic's, as these can be extremely important prior to running catch tools. If the hole was being drilled with Clear Water, it may be required to "Mud Up" to provide the Mud properties required to clean out around the Fish and to carry out the debris and maintain OH integrity with the Fish in the hole.
- Is the Fish in CH or OH? This is important to clarify as it is essential to determine the correct Style, Type and Sizes of DC/BT.
- After determining the DC/BT and Accessories to run, verify the Connections and the Inspection of all the tools and Accessories.
EXAMPLE: DC in the fishing string may be H-90 and the Fishing Jars, Bumper Jar, SJ and DC/BT may be NC50. So ensure that there is a XO available.

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5.2 Running of Tool

Symbol	Work Steps	Hazards	Basic Controls
	Unloading equipment from delivery truck / standby box	Lifting device, line of fire, equipment slippage / dropping, potential pinch points when handling of Tool and Accessories	Toolbox talk: handling / lifting of equipment Proper slinging and handling techniques Keep personnel out of the line of fire of the lifting device and load
	Assembly on Rig Floor, Handling and Assembly of DC/BT	Manual handling of Components and Assembly by Hand	Toolbox Talk: Appropriate use of winches, slings and had placement for handling Large OS.
	Tripping in / Out of Hole	Hang-up in BOP's/Liner Tops U-Tube while running in hole Losing fish while tripping out	Slow & Careful through BOP's and restricted IDs Slow speed tripping in / spot weighed pill tripping out DO NOT ROTATE Fish out of hole
	Make Up/Breakdown of DC/BT and BHA Assembly	Use of Manual Tong or Mechanized Torque equipment Torque Values Pipe or Tools Sliding in slips or tong slippage Sharp shards from tongs	Ensure all are Trained on Equipment and manual handling As per OEM Specifications All Tong and Slip Dies are inspection and in good condition When Sharp Shards are found ensure proper hand placement

- Hold a safety meeting before handling of DC/BT and Accessories and let everyone know the dangers of handling equipment. Explain all the pinch points to them.
- Measure each Tool and record the OD's / ID's / Lengths.
NOTE: In order to properly torque the bottom connection of the BHA and the DC/BT, it may be necessary to slide the DC/BT over a stump in the mouse hole or chain the assembly back to another stationary object prior to applying torque with the tongs. Exercise caution with the placement of the tongs so as not to damage the DC/BT. Make up to recommended Torque values for connection.
- Once DC/BT is torqued onto bottom of BHA, take hole cover off and lower the BHA assembly slowly into wellbore.
NOTE: that the large OD of the DC/BT may hang up upon entry into the BOP or the Wellhead IDs. Be careful as to not stand off and drop.
- Run in the hole slowly, as the large OD of the DC/BT may force fluid out the inside of the Fishing string, especially if there is thick viscosity mud. It is advisable to stop at various times to circulate fluid around the DC/BT to ensure no gas migration or formation (in OH) has compromised the DC/BT.
- Approximately 30' or 10 meters, above the TOF, stop tripping in the hole. Break circulation if possible and establish parameters. The minimum parameters are:
 - Up Weight, (with and without circulation)
 - Down Weight, (with and without circulation)
 - Rotational Torque, (with and without circulation)**NOTE:** Maximum Rotational Torque Limit should be set at the 60% of Drill Pipe Make up Torque. This will allow the DC/BT to "latch" onto the Fish with maximum grip.
NOTE: if the Fish has a weak point that limits how much torque that can be applied, such as a top of a Whipstock, you may have to limit this down to 35 – 50% of DP Make up Torque.
 - Count Pump Strokes and SPP and record. These parameters will be used to check and confirm action of the DC/BT and the Fish..

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6. Slowly lower fishing string to Fish top. In most cases, if a bumper sub is present in the string the free stroke will have to close before weight loss is noticeable. Place mark on Fishing String when DC/BT contacts the Fish top with bumper sub closed.
NOTE: This is why it is extremely important to have precise measurements to ensure no damage to TOF or to keep from pushing the TOF away from the middle of the OH and into the wall.
7. Due to the large OD of the Fish the actual swallow in this Example will be very close to the bottom of the DC/BT. It is often necessary to rotate the Fishing String in order to centralize the Fish into the DC/BT. Be aware that once you are rotating with the DC/BT over the Fish, you are attempting to “latch” onto the Fish.
8. Once the DC/BT is on the Fish, rotate very slowly with slight weight down, approximately one or two points of the weight indicator. Be prepared for a sudden increase in pump pressure if circulation is inhibited through the Fish. Be prepared to stop pumps immediately. Bleed any pressure off of Standpipe, as this may hinder the DC/BT from going over the Fish.
9. Continue to Lower the string slightly to allow the DC/BT to follow the ‘make up” of the DC/BT.
NOTE: If Fish is plugged, the SPP may have increased and this will be pumping you off the TOF. So stop pumps and check for SPP to decrease. If SPP is stable, bleed off pressure to ensure that the Fishing String is not being hydraulically pushed up the hole.
10. Once the Fishing String has no SPP, continue slow rotation until you get + or - 25% of Limit Torque. Let this torque out and then re- torque to maximum Torque Planned to fully engage Fish. NOTE, if you are Shallow, the total Torque may be achieved with VERY few rounds of rotation. So be very careful with rotating.
11. With Fish engaged, it may be possible to check engagement by slowly starting the pumps and watch for an increase in SPP over the Parameters you had before engagement.
EXAMPLE: if parameters with circulating above the Fish were 700 PSI, with 60 pump strokes and now you are circulating with 1500 PSI and 30 strokes, it MAY be an indication of engagement and you may be circulating through the Fish.
12. Slowly raise Fishing String until an increase in string weight is noted. Continue to pull to 2,000 – 5,000 lbs. over string weight to check the “bite” on the Fish.
13. Slack off to string weight and repeat torquing the DC/BT. Do not bump down on Fish. If hydraulic jars are present in the Fishing string do not begin jarring operations until proven that the DC/BT has properly engaged on the Fish. NOTE: If there are no Hydraulic Jars, than work the Fishing String until the full String Weight (Weight of Fishing String plus the Weight of String left in hole) is achieved. This is where you need to know the parameters of the Fishing String, along with the parameters of what is in the hole, so you know your maximum parameters for pulling against the String.
14. If Jars are in the hole, Jarring operations may now begin. Please refer to the Tech Unit on Fishing Hydraulic Jars to ensure that you are aware of all parameters of the Jarring equipment. Knowing the Maximum Jarring Load, the Maximum Over Pull allowed and the correlation to any other Fishing Accessories needs to be taken into consideration. AGAIN, find the WEAKEST point of the Fish and Fishing String and work within those parameters.
15. Work Fish until over pull is achieved and attempt to work Fish free. If possible, attempt to break circulation. If circulation was established, circulate to clean debris around the Fish and ensure that no trapped gas is migrating out of hole. If Fish does NOT come free, See 6.27 below.
16. If Fish is worked free by straight Over Pull or by Jarring, work string up hole slowly, monitoring the parameters of the Total String and comparing to the Fishing String parameters taken prior to latching on. Higher total weight and increased pump pressure are positive indications that the whole Fish is coming out of the hole.

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17. If the Total String Parameters are the same as the Fishing String parameters, it is possible that the DC/BT came off, you were not on the Fish or that something may have changed down hole. Short Fish with very light weight can sometimes be hard to notice on weight indicators, so it is important to watch parameters closely, like pump pressure, to provide the best recommendations. If it is felt that you were not over the Fish, restart engagement from 6.11.
18. While tripping out of the hole, DO NOT ROTATE THE STRING. The DC/BT may release from rotation, but it is always best NOT to rotate tools out of the hole.
19. When the Fishing BHA is at surface, soft break the connections of the Fishing String, as you are coming out of the hole whenever possible. Do not lower a recovered Fish back into the well bore to break connections. Set the Fish in the rotary slips and install a safety clamp if required.
20. To release DC/BT from Fish, put the Fish in the Mouse Hole, if possible and clamp off. Put tongs on the DC/BT and on the Fish and attempt to “unscrew” the DC/BT from the Fish. If a standard RH DC/BT was used, rotate the Fish to the Left, with a normal unscrew action. If a LH DC/BT was used, then you would need to unscrew to the Right to release.
NOTE: Remember, you “latched” onto Fish by threading and wedging the Fish into the threads of the DC/BT and these are not releasable. Ensure that safe operations are done and monitoring of all connections are enforced. IF the DC/BT will not release with maximum tong ability, break the DC/BT at the top and send into the shop with the Fish still attached. It may be possible to break utilizing a Break Out Unit, or cutting the DC/BT off with a cutting torch as a last resort.
NOTE: If the DC/BT was run by itself or jarring on the Fish was unsuccessful, running wireline may be required to Free Point, Back Off, Cut or Severing of the Fish below the TOF. Please follow the direction of the WL and or Company Man for these operations. Be sure to note to all, the limitations of rotation with a DC/BT with a Safety Joint in the hole. Also be mindful of the IDs through the Fishing String.
21. If it becomes necessary to release from the Stuck Fish, The DC/BT is not designed to be released and you will have to activate the Safety Joint. This should be done by following the Directions from the Tech Unit of the Safety Joint, as there are different styles and operating parameters, depending on the Type and Design of the Safety Joint.
22. Once you have released from the Safety Joint and are free from the Fish, other Fishing Operations may commence at this time or the job may be finished.
23. Once all tools have been disassembled and removed from rig floor, ensure that all tools are marked to be sent back, loaded to be sent back or hauled back as soon as possible.
24. If a Supervisor is on location, all paperwork must be completed and signed off by Company Man as required by Region Operations and entered into WPTS.

6.0 Training

This equipment is covered by the Competency Assurance Program, only trained and competent personnel, or those under supervision of such persons, are authorized to undertake this task

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7.0 References and Attachments

7.1 Reference Sources

- [GL-WFT-OEPS-L2-05 Identification, Status & Traceability](#)
- [GL-WFT-OEPS-L2-06 Process / Product Realization and Controls](#)
- [GL-WFT-OEPS-L2-11 Industrial Maintenance](#)
- [GL-WFT-OEPS-L3-14 Risk Management](#)
- [Fishing Technology “Best Practices” Manual](#)
- [NOV, Fishing Tools OEM](#)
- [Logan Rotary Die Collars General Catalog](#)
- [GOTCO Section 1 – EXTERNAL CATCH TOOLS](#)

7.2 Attachments

- Die Collar/Box Tap TU - GL-INTS-OEPS-L4-114
- Die Collar/Box Tap IR - GL-INTS-OEPS-L5-114.01
- Die Collar/Box Tap MIR - GL-INTS-OEPS-L5-114.02

Example 1

1. Fish is broken body of MWD tool with 7 1/4" OD.
2. Hole Size is 8 1/2" OD OH.
3. Fish BHA left in hole is 8 1/2" OD Bit, 7" OD Mud Motor and 6.5' of MWD Body.
4. 9 5/8" OD 53.5# L80 Casing.
5. No Overshots Available that can catch 7 1/4" OD in 8 1/2" OD OH.
6. DC/BT is available that has 8 3/8" OD with 7 3/8" ID Max x 5 1/2" ID Min wicker (Turned down 8 5/8" OD Die Collar). See Chart from Logan General Catalog page 51. This was a 8 5/8" OD Die Collar, turned down specially for this project.
7. ALWAYS run a Rotary Safety Joint with a DC/BT, as they are not considered releasable.
8. Connection on DC/BT is also important. Ensure that all connections are known and any crossovers eliminated as much as possible.

Chart 1 – Logan Rotary Die Collar Assembly vs Catch Size

COMPLETE ASSEMBLY	Logan Part No.	102-563	102-525	102-550	102-1000	102-1075	102-1363
NOMINAL SIZE		6-5/8	6-5/8	6-5/8	6-5/8	6-5/8	6-5/8
	Upset	API Reg	API FH	API IF	API Reg	API Reg	API Reg
TO CATCH		7-1/8	7-3/4	8	8-1/2	8-5/8	10-3/4
TOTAL LENGTH		42	42	42	42	42	46
O.D.		8-5/8	9-1/4	9-1/2	10	10-3/4	13-5/8
DIAMETER OF LARGEST WICKER		7-3/8	8	8-1/4	8-3/4	9-3/4	12
DIAMETER OF SMALLEST WICKER		5-1/2	6-1/8	6-3/8	6-7/8	7-7/8	10

NOTE: These are only recommended and standard Sizes. There is ability to change ID, OD Length and Catch Range in ALL Die Collar configurations. Additional costs and reduction in strengths may come into play, but special sized Die Collars are available.

8.0 Document Change Record

Revision Number	Effective Date	Responsible Person	Part Affected	Change Description
000	21 MAR 2016	TWI Committee	NONE	OEPS Conversion HAZID and Controls added to task.